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Via Electronic Filing

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street SW
Washington, DC 20554

Re: *Wireless E911 Location Accuracy Requirements (PS Docket No. 07-114)*

Dear Ms. Dortch:

Etienne Le Grand, Fiona Lee, Steve Malkos, Boone Spooner, and the undersigned of Google LLC met in person or telephonically with the following Commission staff:

- On November 6, 2019, with Erika Olsen, Senior Legal Counsel, Public Safety and Homeland Security Bureau (PSHSB) (by phone); Michael J. Wilhelm, Chief, Policy and Licensing Division (PLD), PSHSB (by phone); Rasoul Safavian, Senior Technologist, PLD, PSHSB; Alex Espinoza, Attorney-Advisor, PLD, PSHSB; Nellie Foosaner, Attorney-Advisor, PLD, PSHSB; and John A. Evanoff, Deputy Chief, PLD, PSHSB
- On November 6, 2019, with Erin McGrath, Legal Advisor for Wireless, Public Safety and International to Commissioner Michael O’Rielly
- On November 7, 2019, with Will Adams, Legal Advisor to Commissioner Brendan Carr
- On November 7, 2019, with Austin Bonner, Legal Advisor for Wireline and Public Safety to Commissioner Geoffrey Starks
- On November 8, 2019, with Zenji Nakazawa, Public Safety and Consumer Protection Advisor to Chairman Ajit Pai
- On November 8, 2019, with Travis Litman, Chief of Staff and Senior Legal Advisor, Wireline and Public Safety, to Commissioner Jessica Rosenworcel

We presented an overview of the Android Emergency Location Service (ELS) and suggested a modification to the Commission’s *Draft Order*¹ that would help ensure that the regulatory language encourages rather than discourages the continued development of floor-identifying geolocation technologies.

¹ See *In the Matter of Wireless E911 Location Accuracy Requirements*, Draft Fifth Report and Order and Fifth Further Notice of Proposed Rulemaking, PS Docket No. 07-114, FCC-CIRC1911-02 (rel. Oct. 29, 2019) (“*Draft Order*”), <https://docs.fcc.gov/public/attachments/DOC-360516A1.pdf>.

ELS Offers Immediate Benefits to First Responders

We discussed the attached presentation and presented a video illustrating the immediate benefits that ELS provides to first responders.² We explained that ELS is a supplemental service that sends enhanced location³ directly (or via partners) from Android handsets to emergency services when an emergency call is placed. ELS works on more than 99% of active Android devices (those running Android OS version 4.0) and above with Google Play Services). ELS is not a mobile application that the user has to download and install, but instead is built into Google Play Services as part of the Android operating system.

ELS is specifically designed to be easily integrated into public safety professionals' existing systems. It is free to partners and to public safety, and can be updated quickly. If ELS is deployed in a user's region, it will work for the public safety professional when a user dials 911.

The ELS model scales rapidly. Google has partnered with mobile network operators/carriers, emergency infrastructure providers, and governments to deploy ELS in numerous countries and regions. Typically, it takes from six to 24 weeks to deploy ELS depending on resourcing, technical proficiency, and other factors.

ELS is activated only when the user contacts emergency services, at which time the user's location is computed using the Android Fused Location Provider (FLP), which allows provision of indoor or outdoor location using a variety of sensors and is often more accurate and reliable than legacy Phase 1 and Phase 2 control plane locations.⁴ Although FLP is the same geolocation technology used by many Android apps, including Google's own apps, Google does not receive or use the user's location information when ELS uses FLP. Location data is sent via Data SMS (per AML specifications) or HTTPS.⁵ ELS data remain available during the emergency call.

Including a Floor Label Alternative in the Vertical Location Requirement Brings Actionable Information to First Responders Sooner and Encourages Continued Research and Innovation

Google supports the Commission's adoption of a vertical location accuracy metric, but the current draft rule's specification of a single altitude requirement of +/- 3 meters can be improved to promote investment in technologies that move toward delivery of dispatchable location to first responders. Specifically, Google urges the Commission to modify the language of the draft rule⁶ to state that 80% of E911 calls from z-axis capable devices (i.e., devices

² The video screened during the meetings is available at <https://youtu.be/8HvOGXld-2A?t=1439>.

³ See Android ELS, *How It Works*, at <https://crisisresponse.google/emergencylocationsservice/how-it-works/> (last visited Nov. 8, 2019) (providing information on ELS, including materials concerning results from CTIA's test bed in the U.S. in 2017).

⁴ FLP uses GPS, Wi-Fi, mobile networks, and sensors on the handset to compute location. The location provided through ELS is the same location seen on Android devices every day, through Google Maps and other location-based apps and services. See, e.g., Fused Location Provider API, at <https://developers.google.com/location-context/fused-location-provider/> (last visited Nov. 8, 2019).

⁵ See Android ELS, *FAQs*, <https://crisisresponse.google/emergencylocationsservice/faqs/> (last visited Nov. 8, 2019).

⁶ See *Draft Order*, Appendix A, Draft 47 C.F.R. § 9.10.

capable of measuring and reporting altitude) must report z-axis information usable by first responders to locate callers within +/- 1 floor. This information can be reported as:

- an elevation within +/- 3m of the true height above ellipsoid (HAE) of the device or
- a floor label within +/- 1 floor of the floor on which the caller is located.

When HAE is delivered, PSAPs need to translate this information to floor label information. Otherwise, first responders will need to compare the reported elevation with their own estimated elevation in the field, increasing the burden on them and possibly slowing down response time. But, when feasible to deliver, floor labels (*with or without* accompanying HAE) will be immediately usable by first responders.

There may be some scenarios in which HAE estimation is easier or would provide more useful information (e.g., an alpine rescue), and some scenarios in which floor label estimation is easier or more useful (e.g., a low-rise office building or for incidents where building structure information is known). Allowing both to count towards compliance with the rule would promote technological neutrality, acknowledging that no single technology is currently appropriate for designation by government as the preferred long-term solution, and that further private sector research is encouraged.

Both technologies that the Commission relies on in support of the +/- 3 meter metric have significant disadvantages. For instance, among other issues, one solution from the z-axis testbed would require installation of third-party software on a user's device. Location information would be collected using a barometer and sent to the third party's networks even when the user is not placing an emergency call, potentially raising questions about privacy and user consent. Another solution from the z-axis testbed likewise presents a number of issues, including weather dependencies, scaling challenges, and required deployment of new infrastructure.

Furthermore, unlike devices tested in the Stage Z testbed,⁷ the ELS-enabled devices being tested today in CTIA's Stage Za testbed are not prototype units and are commercially deployed at a global scale. Moreover, Google has been consistently improving ELS, with particular emphasis on vertical location. For instance, in 2017, ELS was enhanced to output z-axis HAE in the WGS84 reference ellipsoid for indoor environments. Research on floor label technologies is the next natural step. The draft rule in its current form, however, discourages Google and other stakeholders from continuing to invest in this type of research by rewarding only HAE reporting.⁸ Amending the draft rule to count reporting of floor labels as a means of compliance will help to ensure that innovation in floor identification and reporting is not diminished or halted to the detriment of public safety.

Please do not hesitate to contact me with any questions concerning this filing.

⁷ See 9-1-1 Location Technologies Test Bed, LLC, *Report on Stage Z*, 126 (filed Aug. 3, 2018), available at <https://www.fcc.gov/ecfs/filing/10803074728956> (attachment to Letter from Scott K. Bergmann, Senior Vice President, Regulatory Affairs, CTIA, *et al.*, to Marlene H. Dortch, Secretary, FCC, in PS Docket No. 07-114 (filed Aug. 3, 2018)).

⁸ See *Draft Order*, Appendix A, Draft 47 C.F.R. § 9.10.

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November 8, 2019

Respectfully submitted,

A handwritten signature in blue ink that reads "Megan Anne Stull". The signature is written in a cursive, flowing style.

Megan Anne Stull
Counsel
Google LLC

cc Meeting attendees